

Posttraumatic Stress and Posttraumatic Growth in Three Generations of Czech and Slovak Holocaust Survivors

Marek Preiss,^{1,3} Dita Šamánková,¹ Jiří Štipl,¹ Monika Fňášková,² Markéta Nečasová,² Petr Bob,² Radek Heissler,¹ Alice Prokopová,² Tereza Heřmánková,¹ Veronika Juričková,¹ Edel Sanders,³ Eva Wagenknechtová,¹ and Ivan Rektor²

¹National Institute of Mental Health (NUDZ), Klecany, Czech Republic

²Central European Institute of Technology (CEITEC), Brain and Mind Research Program, Masaryk University, Brno, Czech Republic

³University of New York in Prague (UNYP), Praha, Czech Republic

The psychological consequences of trauma related to the Holocaust have been primarily studied in samples derived from Israel, North America, and Western Europe. Few studies have examined postcommunist countries in Central and Eastern Europe. The present study focused on three generations living in the Czech Republic and Slovakia after World War II (WWII): Holocaust survivors (71–95 years of age), their children (30–73 years of age), and their grandchildren (15–48 years of age). We compared scores on measures of posttraumatic stress symptoms (PTSS; the Posttraumatic Stress Disorder Checklist–Civilian Version) and posttraumatic growth (PTG; the Posttraumatic Growth Inventory) derived from three focal samples with scores from age-matched comparison participants. Higher PTSS scores emerged for Holocaust survivors in all generations, $\eta^2_{P=.087}$ but only participants in the first generation reported higher PTG scores relative to the comparison group, with small effect sizes for the overall group differences, $\eta^2_{P=.029}$. These results are discussed in the historical and political context of postwar Czechoslovakia.

To date, there is no unifying and explanatory interpretation of the mechanisms of transgenerational transmission of trauma (Danieli, 1998). In nonhuman primates, three mechanisms have been described: cross-generational transmission via observational learning, maternal behavior, and prenatal mechanisms (Suomi & Levine, 1998), all of which are assumed to apply to humans as well. From the transgenerational point of view, there is evidence to support the contribution of genetic factors with regard to one's vulnerability to developing posttraumatic stress disorder (PTSD; Krystal & Krystal, 1988) following trauma exposure. According to the stress-diathesis model, heritable predispositions are necessary for PTSD development, with personality traits, such as neuroticism; previous life experiences; and social factors, such as social support (Paris, 2000) playing key roles. Deeper psychological mechanisms also play a role in family interactions, such as standards of loyalty and unful-

filled obligations (Nagata, 1998), which may affect the multi-generational family structure and resonate in society as historical trauma.

Survivors of the Holocaust suffered from extreme and long-term stress during World War II (WWII) and often experienced complex trauma during critical developmental phases, which destabilized core elements of the self and disrupted interpersonal relationships (Berger, 2015; Danieli et al., 2016; Eitinger & Major, 1993). Despite copious, mostly psychoanalytical literature describing detailed mechanisms of psychological traumatization in Holocaust survivors (Kestenberg, 1988; Krystal & Niederland, 1968; Krystal & Krystal, 1988; Luel & Marcus, 1984) and its transference to the second, third, and even fourth generations (Kestenberg & Kestenberg, 1982; Schützenberger, 1998; Sigal, 1998), most studies of Holocaust-related posttraumatic stress conducted in Israel and developed Western countries and employing quantitative methods, such as the PTSD Checklist–Civilian Version (Weathers et al., 1994), remain inconclusive. Some studies, however, have shown increased vulnerability to PTSD in Holocaust survivors (Yehuda, Schmeidler, Wainberg, et al., 1998; Yehuda et al., 2002; Yehuda, Schmeidler, Gillerr, et al., 1998). To some extent, the psychological consequences of the Holocaust appear to depend on postwar geopolitical and cultural circumstances. Survivors living in countries other than Israel have demonstrated lower levels of well-being than comparison groups but no differences in

This research was funded by the Czech Health Research Council, grant number NV18-04-00559, and by the project CEITEC 2020, grant number LQ1601, with financial support from the Ministry of Education, Youth and Sports of the Czech Republic.

Correspondence concerning this article should be addressed to Ivan Rektor, Masaryk University, CEITEC and Department of Neurology, St. Anne's University Hospital, Pekarska 53, 656 91 Brno, Czech Republic. E-mail: irektor@med.muni.cz

© 2021 International Society for Traumatic Stress Studies. View this article online at wileyonlinelibrary.com
DOI: 10.1002/jts.22711

other domains of functioning (Barel et al., 2010). In addition, Danieli and colleagues (2016) found a protective effect of residence in Israel versus North America for the second and third generations of Holocaust survivors.

The first Czechoslovak 1920 Constitution allowed the Jewish population, unlike other minorities, to proclaim themselves Jewish based on either religion or mother tongue (i.e., Hebrew or Yiddish), and individuals who identified their religion as Jewish could also opt for Czech, Slovak, German, or Hungarian ethnicity, among others (Čapková, 2015); these various identity options have caused confusion concerning data. Kulka (1987) and Heitlinger (2006) agreed that only about 15,000 Jews remained alive in reestablished Czechoslovakia in 1945, which represented approximately 5% of the Jewish population in pre-war Czechoslovakia. The Federation of Jewish Communities in the Czech Republic (2020) estimated the overall number of ethnic Jews in the Czech Republic at 15,000–20,000 in 2020; that is, there are approximately as many Jewish residents of the Czech Republic today as there were in the whole of Czechoslovakia in 1945. It should be noted, however, that many of today's Jewish residents were likely born of mixed marriages. In the World Jewish Population Survey of 2002, conducted by The Jewish Agency for Israel (Jewish Agency, 2020), the numbers appear even lower: 3,007 ethnic Jews in the Czech Republic and 3,041 ethnic Jews in Slovakia.

A meta-analysis that examined studies published between 1964 to 2008 found large differences in PTSD symptoms between Holocaust survivors and comparison participants in a set of 12 nonselect samples ($N = 1,763$) from Israel, Canada, the United States, and Australia ($d = 0.72$, $p < .01$; Barel et al., 2010). In a set of 26 nonselect samples, the authors found a significant difference in psychological well-being and positive self-regard between Holocaust survivors and comparison participants ($d = 0.14$, $p < .05$; Barel et al., 2010). Regarding gender differences, in a set of nonselect studies, the difference between male and female samples was not significant. In select samples, Holocaust survivors from female samples were shown to have lower ratings of adjustment than comparison participants (Barel et al., 2010).

In contrast, Sagi-Schwartz et al. (2008) and Van IJzendoorn et al. (2003) found that ratings of adjustment were comparable for first-, second-, and third-generation Holocaust survivors and control participants. The findings from some qualitative studies, however, that have focused on clinically based sequelae have suggested that Holocaust echoes remain. Cohn and Morrison (2017) found that third-generation descendants who were influenced by their active connection with the Holocaust, in contrast to the “conspiracy of silence” that at times found in second-generation descendants, reported experiencing nightmares; however, parental influence did not emerge as a predominant pathway through which trauma was transmitted.

Some authors have noted that traumatic experiences may have some positive effects on an individual's resilience and other aspects of psychological functioning. Helmreich (1992) found that Jewish Holocaust survivors who emigrated to Amer-

ica after WWII were more likely to achieve success in prominent careers, report higher levels of marriage stability, and seek psychotherapy less frequently than American Jews who emigrated before directly experiencing the atrocities of war. Similar features of resilience have also been described by Krystal and Krystal (1988), Eitinger and Major (1993), and Kahana (1992). Sigal (1998), however, pointed out that “the fact that survivors or their children are functioning well at home, in the workplace, and in their social lives does not mean that they are not suffering” (p. 584). Well-adapted survivors are capable of a high degree of dissociation or “numbing” (Lifton, 1982), which enables them to act rationally and practically even in the most demanding conditions. Krystal and Krystal (1988) observed that Holocaust victims often suffer from alexithymia (i.e., the inability to recognize one's own emotions), which leads to complaints of physical discomfort rather than psychiatric symptoms. In some cases, alexithymia and determination to succeed to “win over Hitler” may contribute to low scores on self-report PTSD questionnaires among Holocaust survivors who took part in building the state of Israel (Barel et al., 2010).

The ambiguity of the aftermath of trauma—that is, both positive and negative psychological consequences—led some researchers to conceptualize the construct of posttraumatic growth (PTG). Tedeschi and Calhoun (1996, 2004) defined PTG as psychological adaptation above pretrauma levels and identified three main areas in which trauma exposure can elicit positive changes: self-perception, interpersonal relationships, and philosophy of life (Tedeschi & Calhoun, 1995). The Posttraumatic Growth Inventory (PGI; Tedeschi & Calhoun, 1996) is a standard measure of PTG. Studies on post-Holocaust posttraumatic stress and PTG in Eastern and Central European postcommunist countries, whose cultural differences, in contrast to Western democracies, may have had a strong impact on psychological consequences in the aftermath of the Holocaust are sparse. In Poland, Zieba et al. (2019) found that PTG and posttraumatic depreciation (i.e., changes to one's life philosophy or negative changes in domains such as sense of self and one's perception of their relationships with others) consequent to Holocaust-related trauma coexisted in a mixed qualitative and quantitative narrative analysis. In the Czech Republic and Slovakia, successor states of Czechoslovakia, the only sociological, semiquantitative research conducted among Holocaust survivors was published by Heitlinger (2006), in the book *In the Shadows of the Holocaust and Communism: Czech and Slovak Jews Since 1945*, and based on an analysis of quantitative and qualitative data from 195 semistructured autobiographical questionnaires of Czech and Slovak Jews born between 1940 and 1960. To our knowledge, there has been no quantitative research of Holocaust-related PTSD and PTG and their intergenerational transference in the Czech Republic and Slovakia thus far.

Although the association between posttraumatic stress and PTG is generally assumed (Tedeschi & Calhoun, 1996), cross-sectional studies have yielded mixed results, and quantitative research of Holocaust-related PTG has yielded controversial

outcomes (Barel et al., 2010; Lev-Wiesel & Amir, 2003). We conducted a multigenerational study to begin to address these shortcomings. Given the Holocaust's place in history as an extraordinary attempt to exterminate a specific population and the associated historical trauma, a multigenerational study will aid in addressing the association between posttraumatic stress and PTG.

The shrinking of the Jewish population to approximately 5% of its prewar size in the territory comprising former Czechoslovakia, as well as the aging of the first generation of Holocaust victims, led researchers from the Central European Institute of Technology (CEITEC) and the National Institute of Mental Health (NUDZ) to plan a trigenerational assessment of Holocaust-related trauma in the Czech and Slovak environment to assess the lifelong psychological and neurobiological impact of long-term extreme stress in three generations of Holocaust-afflicted Czech and Slovak Jews. The part of the study presented herein aimed at evaluating the findings related to PTSD and PTG in survivors and their descendants in comparison to age-matched participants recruited from the general population.

The purpose of the present study was to begin an exploration of the moderating variables, especially geopolitical and cultural circumstances, that may influence the experience of posttraumatic stress and PTG. We expected that survivors and their descendants would present with higher levels of posttraumatic stress symptoms (PTSS) and symptoms of PTG compared with respondents who were not affected by the Holocaust. We hypothesized that scores on measures of PTSS and PTG would be higher in survivors than in comparison groups. In addition, we posited that Holocaust survivors would present with higher levels of PTSS and PTG than their offspring.

Method

Participants and Procedure

The total sample consisted of 378 participants (focal group: $n = 221$; comparison group: $n = 157$). The focal group consisted of three subgroups: Holocaust survivors (G1; $n = 47$; 31 men, 16 women), the children of Holocaust survivors (G2; $n = 86$; 52 men, 34 women), and survivors' grandchildren (G3; $n = 88$; 57 men and boys, 31 women and girls); see Table 1 for group characteristics. With few exceptions, the subgroups did not consist of blood relatives. The comparison sample comprised three age-matched subgroups: G1 ($n = 31$; 17 men, 14 women), G2 ($n = 62$; 42 men, 20 women), and G3 ($n = 64$; 36 men and boys, 28 women and girls). The results of a chi-square test did not reveal group differences regarding gender for any generation, $ps = .37-.46$. In the focal subgroups, participants were aged 71–95 years in G1, 30–73 years in G2, and 15–48 years in G3. In the comparison subgroups, participants were aged 73–90 years in G1, 36–73 years in G2, and 16–47 years in G3. According to t test results, with a Welch correction, age did not differ significantly between survivors and comparison participants in G1, G2, or G3, $ps = .068-.51$.

Table 1

Descriptive Statistics of the Focal and Comparison Groups

Variable and generation	Focal			Comparison		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Age (years)						
1	47	82.021	6.194	31	79.839	4.204
2	86	60.837	8.779	62	59.839	9.270
3	88	34.659	8.770	64	33.188	8.338
PTGI score						
1	47	60.043	22.444	31	36.548	24.436
2	85	52.082	23.843	62	51.532	26.046
3	87	48.034	23.622	64	44.438	25.884
PCL-C score						
1	47	32.696	12.343	31	22.677	4.721
2	86	30.081	10.062	62	26.323	10.570
3	88	33.773	11.381	64	27.109	8.435

All participants were born in Czechoslovakia or the successor states (i.e., Czech Republic and Slovakia) established after its split in 1993 and had lived there their entire life—that is, all participants shared a similar geopolitical background. Because most Czech Holocaust survivors are not registered in any organization and it is difficult to get their contact details, volunteers were recruited using a snowball method that consisted of directly addressing local Jewish communities, a public appeal presented in the national and local Czech and Slovak media, and posted information on the CEITEC and NUDZ websites. In both the focal and comparison groups, inclusion was based solely on respondents' statements regarding whether they had a Jewish background. According to statistics from The Federation of Jewish Communities in the Czech Republic (2020), the focal group corresponded to approximately 4% of registered members of various local Jewish communities.

Holocaust survivors (i.e., focal subgroup G1) were included in the study based on their direct experience of Nazi persecution during WWII (i.e., concentration camps or being forced to hide to survive) due to being regarded as Jewish according to the Nuremberg Laws. Participants in the focal G2 subgroup consisted of individuals who claimed that at least one parent was a Holocaust survivor, as defined by the criteria for G1. Finally, participants in focal subgroup G3 reported that at least one grandparent was a Holocaust survivor, as defined by the G1 criteria. Most participants in subgroups G1, G2, G3 were not genetically related members of a single family. Age-matched comparison group respondents did not report a Holocaust family history, did not proclaim Jewish ethnicity or religion, had not been exposed to long-term extreme stress, and were not exposed or were indirectly exposed to war-related traumatic events before the start of the study. The exclusion criteria for all focal and comparison groups included a history of treatment for severe psychiatric disorders, such as psychosis; any kind of severe brain impairment, including brain injury, tumors, or

neurodegenerative diseases; and significant cognitive decline, defined as a score of 26 or lower on the Mini-Mental State Examination.

Respondents typically completed all procedures in 1 day. Study questionnaires were presented in the same order to all respondents, and study participants underwent all examinations in the following order: life history, study questionnaires, biomarker measurement, genotyping, and magnetic resonance imaging (MRI). Typically, one member of the research team accompanied the respondent during this process, which took several hours. In addition to the study questionnaires, the respondents were examined in other ways as part of a broader study examining stress in Holocaust survivors. The first part of the broader study focused on biomarkers of chronic stress, biochemical analyses, and genotyping of *BDNF* Val66Met in buccal epithelial cells, with the assumption that neurobiological markers of stress response and resilience in Holocaust survivors and two generations of their offspring could be identified.

The second part of the broader study focused on the genetic impact of extreme stress (i.e., telomere length and mtDNA copy number) in relation to an individual's Holocaust history. The study posited that the heritable signature (i.e., the impact on telomere length and mtDNA copy-number) would be related to an individual's Holocaust life history and that heritable changes in telomere length or the rate of their shortening and mtDNA in descendants of Holocaust survivors would be able to be identified. The findings from this part of the study demonstrated no significant difference in mtDNA copy number in Holocaust survivors compared to the comparison group (Cai et al., 2020). However, relative telomere length in Holocaust survivors and their offspring was comparable to those found in comparison participants (Konečná et al., 2019).

The third part of the study focused on brain mapping (i.e., structural MRI scans), with the hypothesis that brain structures related to stress response and resilience would be able to be identified, particularly within the limbic system. The results from the first three parts of the broader study have been partially published (Cai et al., 2020; Konečná et al., 2019) or are being prepared for publication. The fourth part of this broader study focused on the measurement of posttraumatic stress and PTG and is presented herein.

All participants provided their written informed consent before study enrollment. The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethical Committee of the National Institute of Mental Health (Klecany). All the data were collected between 2015 and 2020.

Measures

PTSS

The PCL-C (Weathers et al., 1994) is a 17-item, self-report measure of PTSD symptoms as outlined in the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders*. The

instrument is a self-administered screening measure that asks respondents to consider a "list of problems and complaints that people sometimes have in response to stressful experiences" and to indicate how much each item has bothered them during the past month. Responses are rated on a scale of 1 (*not at all*) to 5 (*extremely*), with higher scores indicating higher levels of PTSD symptom severity. The questionnaire was translated into Czech by two psychologists, then back-translated back into English by a native speaker; the translations were discussed, and the final translation was used for the present research. In the present sample, the internal consistency, calculated as McDonald's ω , was .88.

PTG

The 21-item PTGI (Tedeschi & Calhoun, 1996) was used to assess positive change as a result of one's struggle with stressful experiences. Participants were asked to identify the degree to which they experienced each particular change, scoring responses on a scale of 0 (*I did not experience this change as a result of my crisis*) to 5 (*I experienced this change to a very great degree as a result of my crisis*). The total score range for the PTGI is 0 to 105, with higher scores indicative of higher degrees of PTG. The questionnaire was translated into Czech by two psychologists and translated back into English by a native speaker; the translations were discussed, and the final translation was used for the present research. In the present sample, the internal consistency, calculated as McDonald's ω , was .93.

Data Analysis

Mann-Whitney *U* tests (i.e., effect size given by rank-biserial correlation r_{rb}) and Spearman correlations were used to analyze demographic differences about assessments. The generalizability of differences in variables of interest (PCL-C, PTGI) across fixed factors (generations, groups) was analyzed using the analysis of covariance (ANCOVA) model, whereby partial eta-squared effect sizes lower than .06 and higher than .14 are considered small and large, respectively. Gender was coded as 1 for female participants and 2 for male participants, and the variable "group" was coded as 1 for the focal group (i.e., survivors and descendants of survivors) and 2 for the comparison group. All analyses were performed using IBM SPSS (Version 23) and JASP (Version 0.11.1).

Results

In the full sample, the results of Mann-Whitney *U* tests showed no significant differences in PCL-C scores between male and female participants, $p = .055$, nor were there differences regarding educational attainment (i.e., secondary or lower, tertiary and higher), $p = .234$. There was a small negative correlation between PCL-C scores and age, $\rho = -.116$, $p = .024$.

The results of a Mann-Whitney *U* test of the PTGI showed that the total sample demonstrated score differences with regard

Table 2

Analyses of Variance for the Posttraumatic Stress Disorder Checklist–Civilian Version (PCL-C)

Variable	Sum of squares ^a	df	Mean square	F	p	η_p^2
Group	3,634.87	1	3,634.87	35.01	< .001	.087
Generation	490.03	2	2,45.02	2.36	.096	.013
Group x Generation	427.92	2	2,13.96	2.06	.129	.011
Gender	272.42	1	272.42	2.62	.106	.007
Education	17.9	1	17.9	0.17	.678	.00
Residual	38,100.58	367	103.82			

Note. ^a Type III sum of squares.

to gender ($Mdn = 46$ for male participants, $Mdn = 55$ for female participants), $U = 19629.0$, $p = .003$, $r_{tb} = .18$ (small effect). In addition, PTGI scores were not correlated with age, $p = .08$, and there were no differences in educational attainment, $p = .599$. The intercorrelation between the PTGI and PCL-C was significant, but the effect size was relatively small, $\rho = .22$, $p < .001$.

We estimated an ANCOVA model for each variable of interest (i.e., PCL-C score and PTGI score), with group and generation entered as fixed factors and sex and educational attainment entered as covariates. Detailed results of these models are reported in Table 2 and Table 3.

PTSS

The ANCOVA model for the PCL-C demonstrated a significant main effect of group, $F(1, 367) = 35.01$, $p < .001$, with a medium effect size, $\eta_p^2 = .087$. The Group x Generation interaction was not significant, $F(2, 367) = 2.06$, $p = .129$, indicating that participants in the focal group had a higher likelihood of reporting PTSD symptoms across all generations than those in the comparison group (for details, see Table 2).

PTG

The ANCOVA conducted to assess differences in PTGI scores revealed significant main effects of group, $F(1, 366) = 10.976$, $p = .001$, $\eta_p^2 = .029$, and the Group x Generation interaction, $F(2, 366) = 5.639$, $p = .004$, $\eta_p^2 = .03$. The main effect of generation was not significant, $F(2, 366) = 1.84$, $p = .16$. For details on the results of the ANCOVA model, see Table 3. To explain the nature of the interaction, simple main effects were computed for the variable group across levels of interaction. The results showed that significant differences emerged only in the first generation such that participants in the focal group exhibited significantly higher PTGI scores than those in the comparison group, $F(1) = 18.19$, $p < .001$.

Discussion

The present findings partially confirm our hypothesis that Holocaust survivors would demonstrate higher levels of PTSS

and PTG than participants in the comparison group. Individuals in the focal group were more likely to report PTSS in the first and third generations, whereas for PTG, only the first generation of survivors demonstrated higher scores than age-matched comparison participants.

We also hypothesized that survivors would report higher levels of PTSS and PTG than their offspring. This hypothesis was also partly confirmed: Among focal participants, individuals in G1 demonstrated the highest level of growth, but participants in G3 reported higher levels of PTSS than those in G1.

The intercorrelation between PTGI and PCL-C scores was significant but relatively small, $\rho = .22$, $p < .001$. Previous findings on the associations between PTGI scores and measures of PTSS have been mixed, with some studies reporting associations and others not. Our finding supports the assumption that a certain level of stress is necessary for growth to occur.

The present results showed increased scores on measures of both PTSS and PTG for the first generation of Holocaust survivors, which corresponds with results reported in Barel et al.'s (2010) meta-analysis, which demonstrated significant differences in PTSS between Holocaust survivors and comparison participants in both select and nonselect samples. The coexistence of PTSS and PTG in the present sample is similar to the combination of increased adaptation abilities and stress-related symptoms reported by Barel et al. (2010) and Lev-Wiesel and Amir (2003). The latter study confirmed this phenomenon in a sample of Israeli Holocaust survivors who were under 12 years of age at the end of WWII. In the present sample, PCL-C and PTGI scores among participants who were 12 years old or younger at the end of WWII did not differ from scores for those who were older in 1945. Although the number of participants was small, this finding does not support the hypothesis that 12 years of age should be used as a cutoff for measuring changes based on developmental stage. However, in a sample comparable to the current sample, Konečná et al. (2019) detected shorter telomeres in Holocaust survivors who were under 12 years old in 1945 compared with those who were older at the end of WWI. In a meta-analysis of nonselect studies, four child survivor samples (i.e., aged 16 years or younger at the end of WWII; $n = 320$) showed a significantly lower level of adjustment than adults, with a combined Cohen's d effect size of 0.33,

Table 3
Analyses of Variance for the Posttraumatic Growth Inventory (PTGI)

Variable	Sum of squares ^a	df	Mean square	F	p	η_p^2
Group	6,429.42	1	6,429.42	10.98	.001	.029
Generation	2,155.26	2	1,077.63	1.84	.16	.010
Group x Generation	6,606.09	2	3,303.04	5.64	.004	.03
Gender	4,901.63	1	4,901.63	8.37	.004	.022
Education	0.00	1	0.00	0.00	.961	.00
Residual	214,398.95	366	585.79			

Note. ^aType III sum of squares.

95%; CI [0.10, 0.56], $p < .01$, for general ratings of adjustment (Barel et al., 2010).

In the present study, there were only minor, nonsignificant differences in PCL-C ($M = 30.08$ vs. $M = 26.32$) and PTGI ($M = 52.08$ vs. $M = 51.53$) scores between G2 participants in the focal and comparison groups. These findings correspond with research outcomes reported by Van IJzendoorn et al. (2003) in a nonselect sample of more than 4,000 second-generation participants now living mainly in Israel and the United States, who reported scores similar to participants in comparison groups on measures of general mental health, adaptation, PTSS, and psychiatric symptoms (i.e., the Brief Mental Health Index, Tennessee Self-Concept Scale, and Impact of Event Scale). From these data, the authors suggested that “the absence of secondary traumatization in nonclinical samples of second-generation Holocaust survivors” (Van IJzendoorn et al., 2003, p. 467). One consideration, however, is whether quantitative, questionnaire-based methods are best suited to capture the fine differences between populations in this field of research. Brom and colleagues (2001) employed a qualitative tool—an in-depth structured interview—to detect separation-individuation issues in a double-blind study focused on Holocaust survivors’ offspring compared to children whose parents did not experience Nazi persecution.

Regarding the absence of PTG in G2, Dekel et al. (2013, p. 532) noted that “being a second-generation Holocaust survivor may have a limiting effect on positive aspects” (p. 532). There are several possible explanations for this phenomenon in the context of the Czech and Slovak environment. Specific features of first-generation parenting styles, such as overprotectiveness, fear of separation, obsession with food, and the need to please and protect parents, that impacted the second and third generations, as described by Scharf and Mayseless (2011), have also been described by Czech psychotherapists (Klímová, 2007). In addition, the silence that is typical in families of first-generation survivors in all countries was more prominent in postwar Czechoslovakia due to institutionalized denial and political oppression (Klímová, 2007).

The potential of experiencing PTG may have been diminished due to a lack of information about family, as knowledge of one’s family history has been positively correlated with vari-

ables such as internal locus of control, self-esteem, and family functioning and cohesiveness (Duke et al., 2008). In Czechoslovakia, the children of Holocaust survivors, mostly born in the 1950s, often inferred they were Jewish based on minor and indirect cues and were often confronted with their roots by strangers (Heitlinger, 2006; Klímová, 2007). In addition, the second generation of Holocaust victims tended to blame themselves for their otherness and did not want to share their parents’ destiny of victimhood (Fogelman, 1998). Similar to the findings from a study of post-WWI Norwegian Jews and their offspring (Major, 1996), many second-generation Czech and Slovak descendants of Holocaust survivors opted for a high degree of assimilation to non-Jewish society.

There is limited published research on third-generation Holocaust survivors (e.g., Cohn & Morrison, 2017). The present findings demonstrated higher levels of PTSS in the grandchildren of Holocaust survivors compared to age-matched control participants (M PCL-C score: 33.77 vs. 27.11, respectively). Similarly, Ullmann and colleagues (2013) reported that Russian-Jewish migrants (age range: 17–36 years) in Germany demonstrated a higher prevalence of depression, fear, and psychosomatic symptoms, as well as a correlation between anti-semitic experiences and psychosomatic symptoms, compared with the German residential population. In addition, Giladi and Bell (2013) reported significantly higher levels of PTSS in the third-generation of Jewish American and Canadian survivors compared to matched control groups for each generation. In a qualitative study (i.e., face-to-face interviews), Cohn and Morrison (2017) detected common emotional responses and sensitivities that impact patterns of thinking in the third generation of Holocaust victims. In contrast, Sagi-Schwartz et al. (2008) did not find significant differences in psychological well-being and adaptation in 13 samples of the third generation of 1,012 Holocaust survivors’ families from Israel, Canada, and the United States compared to controls ($d = 0.04$, $p = .66$) and attributed these results to a resilience factor on the part of the Holocaust survivors’ offspring.

In general, some of the third-generation offspring of Holocaust survivors may feel surprisingly strongly about their Jewish heritage, possibly overcompensating for their parents’ and grandparents’ forced identity renunciation. This generation

appears to be reconstructing their grandparents' history and re-discovering their positive legacy. In theory, their identification with their grandparents may account for both PTSS and PTG.

Another important factor regarding third-generation identity formation and this generation's ability to integrate family trauma into their psyche can be seen in the post–Velvet Revolution rise of psychotherapy. The first Holocaust trauma-oriented groups started to appear in the dawn of the anticommunist Velvet Revolution of 1989, mainly as a result of the dissident journalist and hidden child Helena Klímová and her colleagues, who founded the first Czech institution for trauma psychotherapy (i.e., the Rafael Institute) with the support of British analysts; the services of this institution continue to benefit both the second and third generations (Singer, 2019).

Several strengths and limitations of the present study should be discussed. One strength was the elimination of the immigration effect: All participants had been living in the same territory for many years. This enabled the study to be culturally specific, bringing a unique view on Czech–Slovak Holocaust survivors. In addition, it is one of the few studies in this area of research conducted in postcommunist Eastern and Central European countries.

One limitation lies in the recruitment method. Some authors (Barel et al., 2010; Sagi-Schwartz et al., 2008; Van IJzendoorn et al., 2003) have pointed out that certain variables significantly differ in measurements within select and nonselect samples. The samples in the present study were select, recruited using the snowball sampling technique. Concerning the specificity of the studied participants, all of whom resided in a small territory, the sample was comparatively large and, therefore, representative, particularly in G2 and G3. Nevertheless, we cannot verify that the number of individuals with psychological symptoms who entered the study via the snowball method was potentially higher than what would be found in randomized samples. The fact that most participants across three generations in the focal group were not genetically related also presents a weak point in the interpretation of the outcomes. Samples of three generations of discrete families (i.e., blood relatives) would enable us to examine the links between PTSS transmission and PTG more closely, especially if quantitative methods were complemented by qualitative research. Unfortunately, it is not plausible to find enough families that fit this criterion in the Czech Republic; such families could not make a cohort large enough to generate any statistically relevant results.

In the present study, we assumed that participants in the comparison group were not traumatized by the Holocaust. However, WWII also brought suffering to much of the Czech population (e.g., the burning of the village of Lidice and the murder of much of the population). Thus, the comparison group cannot be viewed as a set of individuals who were not potentially traumatized.

Severe psychiatric disorders, severe brain impairment, and significant cognitive decline were exclusion criteria for all par-

ticipants. However, these could be variables that explain the effects of stress. Therefore, it would be valuable to investigate these variables in future research.

Another limitation was that the assessments of PTSS and PTG were based solely on self-report questionnaires that, unlike qualitative tools (e.g., in-depth interviews), may not have captured subtle differences between the focal and comparison samples. Qualitative instruments might reveal individual traces of PTSS and PTG not included in the current quantitative tools. Moreover, as proposed by Krystal and Krystal (1988), victims of trauma exposure may suffer from alexithymia and employ dissociation as their main coping strategy; as such, their inability to recognize their own emotions and states of mind could invalidate their responses on any self-report tools. In the Czech and Slovak environment, this would perhaps apply mainly to individuals in the second generation, who often lived in almost complete denial of their family history.

Because the present research was limited to three generations, we were unable to untangle whether the outcomes demonstrate the psychological aftermath of the Holocaust or the consequences of the Jewish history interlaced with continuous adversity and repeated traumatic experiences. Unfortunately, contemplations on possible ways to modify trauma responses and PTG in the Czech and Slovak population that stem from the specifics of national history are far beyond the scope of this paper. The biological portion of our study, which has not yet been fully published, will hopefully shed some light on the hypothesis that these results demonstrate a phenotype.

The present findings suggest that the third generation of survivors of a highly traumatic experience can show a combination of PTSS and traumatic stress responses. Therefore, care that goes beyond one generation should be considered in this regard. The cultural background of our study respondents differed from those of residents of Israel, the United States, and Western Europe in many important aspects, reaching deep into Czech and Slovak history. This culturally specific research, however, appears to have yielded results comparable with those reported in international studies that have focused on PTSS and PTG associated with historical Holocaust trauma. Sagi-Schwartz (2015) concluded that Holocaust survivors continue to show signs of their trauma exposure seven decades later; the present finding that the first generation of Holocaust survivors demonstrated increased levels of both PTSS and PTG supports Sagi-Schwartz' deduction. The reasons behind the absence of higher PTSS scores in the second generation and similar lack of PTG in the second and third generations of Czech and Slovak Holocaust survivors' offspring require further investigation. The present research points to a need for long-term social, health-related, and psychotherapeutic support for Holocaust survivors and their descendants. Further, long-term care and support may provide an opportunity for other groups of individuals affected by genocide to cope with losses, traumatic experiences, and injustice.

Open Practices Statement

The study reported in this article was not formally preregistered. Neither the data nor the materials have been made available on a permanent third-party archive; requests for the data or materials can be sent via email to the lead author at email marek.preiss@nudz.cz

References

- Barel, E., Van IJzendoorn, M. H., Sagi-Schwartz, A., & Bakermans-Kranenburg, M. J. (2010). Surviving the Holocaust: A meta-analysis of the long-term sequelae of a genocide. *Psychological Bulletin*, 136(5), 677–698. <https://doi.org/10.1037/a0020339>
- Berger, R. (2015). *Stress, trauma, and posttraumatic growth: social context, environment, and identities*. Routledge.
- Brom, D., Kfir, R., & Dasberg, H. (2001). A controlled double-blind study on children of Holocaust survivors. *Israel Journal of Psychiatry and Related Sciences*, 38(1), 47–57.
- Cai, N., Fňášková, M., Konečná, K., Fojtová, M., Fajkus, J., Coomber, E., & Rektor, I. (2020). No evidence of persistence or inheritance of mitochondrial DNA copy number in Holocaust survivors and their descendants. *Frontiers in Genetics*, 11, 87. <https://doi.org/10.3389/fgene.2020.00087>
- Čapková, K. (2015). *Czechs, Germans, Jews: National identity and the Jews in Bohemia*. Berghahn Books.
- Cohn, I. G., & Morrison, N. M. V. (2017). Echoes of transgenerational trauma in the lived experiences of Jewish Australian grandchildren of Holocaust survivors. *Australian Journal of Psychology*, 70(3), 199–207. <https://doi.org/10.1111/ajpy.12194>
- Danieli, Y. (Ed.). (1998). *International handbook of multigenerational legacies of trauma*. Springer.
- Danieli, Y., Norris, F. H., & Engdahl, B. (2016). Multigenerational legacies of trauma: Modeling the what and how of transmission. *American Journal of Orthopsychiatry*, 86(6), 639–651. <https://doi.org/10.1037/ort0000145>
- Dekel, S., Mandl, C., & Solomon, Z. (2013). Is the Holocaust implicated in posttraumatic growth in second-generation Holocaust survivors? A prospective study. *Journal of Traumatic Stress*, 26(4), 530–533. <https://doi.org/10.1002/jts.21836>
- Duke, M. P., Lazarus, A., & Fivush, R. (2008). Knowledge of family history as a clinically useful index of psychological well-being and prognosis: A brief report. *Psychotherapy: Theory, Research, Practice, Training*, 45(2), 268–272. <https://doi.org/10.1037/0033-3204.45.2.268>
- Eitinger, L., & Major, E. F. (1993). Stress of the Holocaust. In L. Goldberger & S. Breznitz (Eds.), *Handbook of stress: Theoretical and clinical aspects* (pp. 617–640). Free Press.
- Federation of Jewish Communities in CR. (2020, March 27). Statistika. <https://www.fzo.cz/o-nas/statistika/>
- Fogelman, E. (1998). Group belonging and mourning as factors in resilience in the second generation of Holocaust survivors. *Psychoanalytic Review*, 85(4), 537–549.
- Giladi, L., & Bell, T. S. (2013). Protective factors for intergenerational transmission of trauma among second- and third-generation Holocaust survivors. *Psychological Trauma: Theory, Research, Practice, and Policy*, 5(4), 384–391. <https://doi.org/10.1037/a0028455>
- Heitlinger, A. (2006). *In the shadow of the Holocaust and communism: Czech and Slovak Jews since 1945*. Transaction Publishers.
- Helmreich, W. (1992). *Against all odds: Holocaust survivors and the successful lives they made in America*. Simon and Schuster.
- Jewish Agency. (2020, March 27). The Jewish Agency for Israel–U.S. <https://www.jewishagency.org/>
- Kahana, B. (1992). Late-life adaptation in the aftermath of extreme stress. In M. Wykel, E. Kahana & J. Kowal (Eds.), *Stress and health among the elderly* (pp. 151–171). Springer.
- Kestenberg, J., & Kestenberg, M. (1982). *Generations of the Holocaust*. Basic Books.
- Kestenberg, J. (1988). *Child Survivors of the Holocaust*. Guilford Press.
- Klímová, H. (2007). The totalitarian system and narcissistic injury: Holocaust consequences as a special case. *Group Analysis*, 40(3), 366–378. <https://doi.org/10.1177/0533316407081762>
- Konečná, K., Lyčka, M., Nohelová, L., Petráková, M., Fňášková, M., Koritáková, E., Sováková, P. P., Brabencová, S., Preiss, M., Rektor, I., Fajkus, J., & Fojtová, M. (2019). Holocaust history is not reflected in telomere homeostasis in survivors and their offspring. *Journal of Psychiatric Research*, 117, 7–14. <https://doi.org/10.1016/j.jpsychires.2019.06.018>
- Krystal, H., & Niederland, W. G. (1968). Clinical observations on survivor syndrome. In H. Krystal (Ed.), *Massive psychic trauma* (pp. 327–348). International Universities Press.
- Krystal, H., & Krystal, J. H. (1988). *Integration and self-healing: Affect, trauma, alexithymia*. Analytic Press.
- Kulka, E. (1987). *Jews in Svoboda's army in the Soviet Union: Czechoslovak Jewry's fight against the Nazis during World War II*. University Press of America.
- Lev-Wiesel, R., & Amir, M. (2003). Posttraumatic growth among Holocaust child survivors. *Journal of Loss and Trauma*, 8(4), 229–237. <https://doi.org/10.1080/15325020305884>
- Lifton, R. J. (1982). Beyond psychic numbing: A call to awareness. *American Journal of Orthopsychiatry*, 52(4), 619–629. <https://doi.org/10.1111/j.1939-0025.1982.tb01451.x>
- Luel, S. A., & Marcus, P. (1984). *Psychoanalytic reflections on the Holocaust: Selected essays*. Ktav Publishing House.
- Major, E. F. (1996). The impact of the Holocaust on the second generation: Norwegian Jewish Holocaust survivors and their children. *Journal of Traumatic Stress*, 9(3), 441–454. <https://doi.org/10.1002/jts.2490090304>
- Nagata D. K. (1998). Intergenerational effects of the Japanese American internment. In Y. Danieli (Ed.), *International handbook of multigenerational legacies of trauma* (pp. 125–139). Springer.
- Paris, J. (2000). Predispositions, personality traits, and posttraumatic stress disorder. *Harv Review of Psychiatry*, 8(4), 175–183. <https://doi.org/10.1093/hrp/8.4.175>
- Sagi-Schwartz, A., Van IJzendoorn, M. H., & Bakermans-Kranenburg, M. (2008). Does intergenerational transmission of trauma skip a generation? No meta-analytic evidence for tertiary traumatization with third generation of Holocaust survivors. *Attachment & Human Development*, 10(2), 105–121. <https://doi.org/10.1080/14616730802113661>
- Sagi-Schwartz, A. (2015). Does extreme trauma transfer? The case of three generations of the holocaust. In K. E. Cherry (Ed.), *Traumatic stress and long-term recovery: Coping with disasters and other negative life events* (pp. 133–148). Springer.
- Scharf, M., & Mayseless, O. (2011). Disorganizing experiences in second- and third-generation Holocaust survivors. *Qualitative Health Research*, 21(11), 1539–1553. <https://doi.org/10.1177/1049732310393747>

- Schützenberger, A. A. (1998). *The ancestor syndrome: Transgenerational psychotherapy and the hidden links in the family tree*. Routledge.
- Sigal, J. J. (1998). Long-term effects of the Holocaust: Empirical evidence for resilience in the first, second, and third generation. *Psychoanalytic Review*, 85(4), 579–585.
- Singer V. (2019). Zkušenosti z terapie klientů s problematikou transgeneračního přenosu v ambulantní psychiatrické praxi [Experience from the therapy of clients with the issue of transgenerational transmission in outpatient psychiatric practice] In M. Preiss & D. Vizinová (Eds.), *Transgenerational transmission of (not only) trauma* (pp. 316–335). Irene Press.
- Suomi, J. S., & Levine, S. (1998). Psychobiology of intergenerational effects on trauma: Evidence from animal studies. In Y. Danieli (Ed.), *International handbook of multigenerational legacies of trauma* (pp. 623–637). Plenum Press.
- Tedeschi, R. G., & Calhoun, L. G. (1995). *Trauma & transformation: Growing in the aftermath of suffering*. Sage Publications.
- Tedeschi, R. G., & Calhoun, L. G. (1996). The Posttraumatic Growth Inventory: Measuring the positive legacy of Trauma. *Journal of Traumatic Stress*, 9(3), 455–471. <https://doi.org/10.1007/BF02103658>
- Tedeschi, R. G., & Calhoun, L. G. (2004). Posttraumatic growth: Conceptual foundations and empirical evidence. *Psychological Inquiry*, 15(1), 1–18. https://doi.org/10.1207/s15327965pli1501_01
- Ullmann, E., Barthel, A., Licinio, J., Petrowski, K., Bornstein, S. R., & Strauß, B. (2013). Increased rate of depression and psychosomatic symptoms in Jewish migrants from the post-Soviet-Union to Germany in the 3rd generation after the Shoa. *Translational Psychiatry*, 3(3), e241. <https://doi.org/10.1038/tp.2013.17>
- Van IJzendoorn, M. H., Bakermans-Kranenburg, M. J., & Sagi-Schwartz, A. (2003). Are children of Holocaust survivors less well-adapted? A meta-analytic investigation of secondary traumatization. *Journal of Traumatic Stress*, 16(5), 459–469. <https://doi.org/10.1023/A:1025706427300>
- Weathers, F. W., Litz, B. T., Huska, J. A., & Keane, T. M. (1994). PTSD Checklist—Civilian Version. <https://www.ptsd.va.gov/professional/assessment/adult-sr/ptsd-checklist.asp>
- Yehuda, R., Halligan, S. L., & Bierer, L. M. (2002). Cortisol levels in adult offspring of Holocaust survivors: Relation to PTSD symptom severity in the parent and child. *Psychoneuroendocrinology*, 27(1–2), 171–180. [https://doi.org/10.1016/S0306-4530\(01\)00043-9](https://doi.org/10.1016/S0306-4530(01)00043-9)
- Yehuda, R., Schmeidler, J., Giller, Jr., E. L., Siever, L. J., & Binder-Brynes, K. (1998). Relationship between posttraumatic stress disorder characteristics of Holocaust survivors and their adult offspring. *American Journal of Psychiatry*, 155(6), 841–843. <https://doi.org/10.3389/fpsyg.2017.01099>
- Yehuda, R., Schmeidler, J., Wainberg, M., Binder-Brynes, K., & Duvdevani, T. (1998). Vulnerability to posttraumatic stress disorder in adult offspring of Holocaust survivors. *American Journal of Psychiatry*, 155(9), 1163–1171. <https://doi.org/10.1176/ajp.155.9.1163>
- Zieba, M., Wiechec, K., Bieganska-Banas, J., & Mieszczenko-Kowszevicz, W. (2019). Coexistence of post-traumatic growth and post-traumatic depreciation in the aftermath of trauma: Qualitative and quantitative narrative analysis. *Frontiers in Psychology*, 10. <https://doi.org/10.3389/fpsyg.2019.00687>